THE

VETERINARY JOURNAL

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Editorials.

ADVANCING.

In the House of Commons on the 27th November, Captain Fitzroy, M.P. for Daventry, moved a new clause in the Agriculture (Councils, etc.) Bill, providing that the Board of Agriculture and Fisheries should be given the status of a first grade department, to be known as the Ministry of Agriculture and Fisheries. Sir A. Griffith-Boscawen (Secretary to the Board of Agriculture) said that the Board as such was rather of a sham character, consisting largely of Secretaries of State who had never been summoned. *The proposed clause contemplated a change of name. He was quite ready to accept it. The clause was read a second time and added to the Bill.*

Apparently what we have desired, insisted on and hammered at for several years is within reasonable distance of accomplishment. A change of name may not benefit us much, but an uplifting of the status to that of a first-class Ministry of State ought to carry with it an increase of the veterinarians of the Ministry, and an adequate rise in their salaries. In this way our profession should sustain a marked uplift both materially and as regards social influence and status. A wide view needs to be taken of the profession's field of labour, duties, operations and aid to agriculture, and the scientific and professional points of view in connection with the production, care, rearing and management of animals in health and disease ought to be strongly represented in the Ministry. The control of infectious and contagious diseases, in which we have hitherto taken a large part under the Board, is not

the only sphere in which we should be given a prominent position. It is surely of paramount importance that regulations and propaganda in connection with hygiene and the prevention of disease in animals should be almost completely in our hands also. The doctors are a strong force in the Ministry of Health. We want to be an equally virile body in the Ministry of Agriculture. We are getting a small look-in in the Ministry of Health because thinking men are beginning to see that a true survey of human health cannot afford to overlook the indirect influence of animal health on a populace. But with agriculture the maintenance in health of the animals of the country is a kingdom in which we should reign supreme. It is an economic factor on which the true welfare of a country depends. No body of men are so well or adequately equipped as veterinarians to carry out the privileges and duties of the office. We must be ready and grasp our opportunities, look up and hold our own in the company of other professional men, and leave behind us for ever the shopman and penny bazaar kind of mind and understanding. G. M.

THE USES OF HUMOUR.

The man in authority, the schoolmaster, the professional man with pupils, the professor and the tutor ought all to know the value of gilding or making delectable the philosophic pill. Humour will not always be appreciated at its full worth unless the one that it is thrown at has a fairly well educated mind, a nimble wit or a receptive intellect. Most men will allow that it is better to tell a learner that " it is up here where you want it," and indicate the brain-pan with a twist of the forefinger, than to tell a fellow trying to do his best that he is a dullard, a clumsy fool, or a nincompoop. Young men when given an uncongenial task to do will perform it more easily, thoroughly and quickly if instructions are given to them with a smack of humour in them. Perhaps there was never a teacher in our young days who gave his pupils more tasks to do than a certain Irishman of our acquaintance, but, on the other hand, there was never a teacher so well beloved and so affectionately obeyed. He was ever " a thorn in the flesh " to the man not down to early morning lessons punctually, and the way he used to greet the late entrant into the class room, metaphorically, used " to set the table in a roar." The entrants thought they might escape unobserved to their desks, but the voice of the monitor and his observant eye soon taught them that the hope was futile. It used to be, " Late again, Mr. Jones, 500 lines, ' tis the voice of the sluggard I heard him complain, you have woke me too soon, I must slumber again.' " " You are late, Mr. Roberts, 250 lines, ' I must shake off dull sloth and early rise to pay my morning

sacrifice,' "or," late again, Mr. Ellis, 150 lines, 'Awake my soul and with the sun, thy daily stage of duty run.' " This mentor got things done and kept discipline by a rare command of humour. A point may be fixed in the mind of a learner or a lesson or precept anchored by a humorous illustration. When lecturing on tympanitis in cattle, a great Scotchman and professor now deceased, used to tell his class about a man he knew that was a real glutton and much given to attacks of " wind." The narrator would tell how this man when invited to a dinner or banquet, would get down to the table first and be half-way through the courses before any of the other guests had started. Finally, after years of excessive eating and drinking, the man fell on evil days and was reduced to living in a garret with skylight windows to it. Even here he contrived to have one last good feed, and then lied down on his bed and died, and the professor used to say, " and then, gentlemen, his body blew up and expanded and expanded until it burst the buttons off his waistcoat and broke the windows of the skylight and went flying through." Did those pupils ever forget what tympanitis was after that? Not likely.

Again, to indicate and impress on a novice that a sow should have 12 teats, the following tale was told. A certain farmer came to pay his rent to the landlord who happened to be at dinner with his family. The farmer was ushered into the presence of the family gathering round the dinner table and took a seat away from the table near the fire. After a few general remarks with the squire about the crops and the weather, he told him that his good sow had given birth to a litter of 13 pigs. " Well, John," says the squire, " and whatever does the thirteenth one do? " John looked at the squire and then at the well victualled table and said, " Why, he does just t' same as I'm doing naa, he sits still and watches t' others drinking and eating." The lessons founded and grounded by a command of humour in illustration and precept must fall on fertile soil. They must indeed fall there if their use is not to be lost. The following anecdote shows where humour falls on good soil and on stony ground. An Irishman and a Scotchman travelling in a strange countryside together, came across a notice board which read :—" Whoever is in these parts and has lost their way and cannot read this notice, please enquire at the house down below." The Irishman perused the notice and laughed long and loudly. The Scotchman read it, scratched his head, and failed to see anything d——d funny in it. They passed on and found sleeping accommodation in the same bedroom for the night. In the middle of the night the Scotchman woke up and shouted across the bedroom to the Irishman, " Ive seen it. I've seen it. I've seen it. " What are you making your row about?" says the Irishman, " seen

RARY ALABAMA
TECHNOLOGICAL INST. TUSKEGEE

what ? " " Why, that joke on the notice board," says the Scotchman. " Well, what is it ? " says Pat. " Well," says the Scotchman, " they'd go down and enquire at the house and maybe the house would be empty." Renewed gurgling mirth by the Irishman.

There is no doubt that a sense of humour is a fine gift and asset in a writer, teacher or speaker. Humour, alas ! cannot often be imported into scientific instruction, but there are men that can even make the dry as dust bones of science gyrate grotesquely and facetiously. A motor-car is an inanimate, finely constructed piece of mechanism that does not lend itself easily to the flippant jest and the humorous quip, unless one is a Harry Tate sort of humourist, but I laughed when a friend of mine wrote of a motor-car the other day as proceeding on its journey " with a joyful noise of ironmongery." So many of them do nowadays. A little humour introduced into a clinical article has its uses. It will sometimes make men read it when they would otherwise pass it by. We have some graduates who possess the happy faculty, and they should not let it become rusty. G. M.

Original Communications.

ON THE OCCURRENCE OF THE LANCEOLATE FLUKE (*DICROCŒLIUM DENDRITICUM* RUD.) IN THE LIVER OF A BRITISH SHEEP.

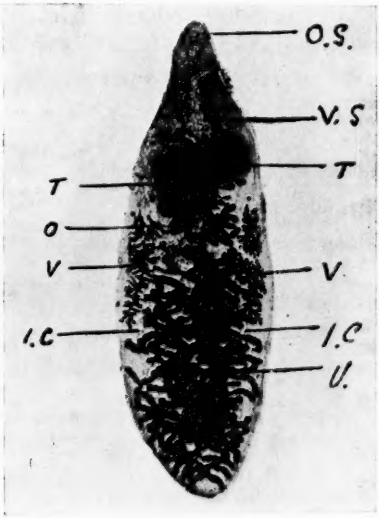
A. W. NOEL PILLERS, F.R.C.V.S.
Liverpool.

On Oct. 11th I received for examination the liver of a Scotch lamb. The organ, which weighed about half a pound, showed no piping as do badly infested fluky livers. The parasites in this case were detected on incision, all livers being so treated at the abattoir where the specimen came from on account of the presence of fluke at the moment. On dissection I was able to obtain 954 specimens which turned out to belong to the above species. A number of parasites were adherent to the packing material so that I estimated that the liver originally contained well over 1000 of these flukes. No *fasciola hepatica* were present. The bile ducts were thickened. The infection can hardly be regarded as a chance one. In Neumann's work[1] it is stated that this species does not occur in England. I have not previously encountered it myself, nor can I find any previous record of its presence here. I do not think Mayall[2] intends to infer that this species is a British one, although he states : " This disease is caused by two parasites called distomes (flukes), the one a large one, *Distomum hepaticum*, and the other a small one, *Distomum lanceolatum*. France . . . . . Britain, have all suffered economic losses from severe outbreaks of the fluke disease."

Abroad this species is often associated with the liver fluke and is regarded as a secondary agent in the causation of liver rot. The position of the species in the animal kingdom is shown thus :—

Kingdom—Animalia ; Sub-kingdom—Platyhelminthes ; Class—Trematoda ; Natural Order—Digenea ; Sub-order—Prostomata. Family—Dicrocœliidœ; Genus—*Dicrocœlium*; Species—*D. dendriticum.*

Stephens[3] gives the following synonymy and description of this species :—



Dicrocœlium dendriticum OS ORAL SUCKER ; VS, VENTRAL SUCKER ; TT, TESTES ; O, OVARY ; V, VITELLARIA ; IC, INTESTINAL CÆCA ; U, UTERUS TWELVE TIMES NATURAL SIZE.

Dicrocœlium lanceatum Stil. and Hass 1896.
Fasciola lanceolata Rud. 1803 (*nec* Schrank 1790).
Distomum lanceolatum Mehlis 1825.
Dicrocœlium lanceolatum Dujardin 1845.

Body lancet shaped, narrowing especially at the anterior extremity ; length 8-10mm., breadth 1.5-2.5 mm., the greatest breadth usually behind the middle of the body. Suckers distant from each other by about one-fifth of the length of the body ; oral sucker about 0.5 mm. ventral sucker about 0.6 mm. Pharynx globular adjoining the oral-sucker, œsophagus 0.6 mm. in length ; intestinal cæca reach to four-fifths of the body length. Genital pore at the level of the bifurcation of the intestine, cirrus pouch small and slender. The large slightly lobed testes lie obliquely one behind the other behind the ventral

sucker; the ovary, which is considerably smaller, is placed behind the posterior one; the vitellaria commencing at the level of posterior testis terminate far before the cæca. The uterus situated behind the ovary extends throughout the posterior end, not confined to the central field, but overlapping the lateral fields with its transverse coils; at the posterior edge of the body it turns back again and winds forwards to the ovary in transverse loops then between the testes and finally dorsal to the ventral sucker terminates in the genital pore. The thick shelled eggs when young are yellowish, when older dark brown. They measure 38 microns to 45 microns by 22 microns to 30 microns.

The accompanying photograph, unfortunately not a very good one, shows a fair number of anatomical details.

REFERENCES.

1. Neumann, Parasites and Parasitic Diseases of the Domesticated Animals, Macqueen, 1905.

2. Mayall Distomatosis Liver Rot or Fluke in Sheep, VETERINARY JOURNAL, p. 92, vol. 24, 1917.

3. Stephens' Animal Parasites of Man. Fantham, Stephens and Theobald, 1916.

A SQUAMOUS EPITHELIOMA, INVOLVING THE FRONTAL AND SUPERIOR MAXILLARY SINUSES IN A MARE.

BY J. F. D. TUTT, M.R.C.V.S., F.R.M.S.
Late R.A.V.C. (T.F.), Winchester.

THE subject from which this growth was removed was a cart mare 20 years of age, used for farm work.

The patient had had a previous attack of nasal gleet, following catarrh, of a few months' duration during 1918, but the gleet did not recur until until early in 1919. When first seen, early in March, there was a purulent discharge from the near nostril. After some delay the owner consented to trephining of the frontal and maxillary sinuses, this being carried out under the influence of a local anæsthetic (collosol cocaine) on 27th March. No discharge could be obtained from the lower maxiliary opening when an irrigation douche was put in at the frontal opening, but one was readily obtained if the douche was inserted in the maxillary opening through the one in the frontal bone

On 26th April, under the influence of a general anæsthetic, the frontal sinus was again trephined at the site recommended by Siedamgrotzky, *i.e.*, about one-half to three-quarters of an inch in front (below, if the head be held with its long axis disposed vertically) of a horizontal

line drawn between the two inner angles of the eye, and 1¼ to 1½ inches from the middle line of the face, and communication between it and that of the nose effected by thrusting a director downwards and inwards at the deepest point, breaking through the thin plate of bone and the mucous membrane covering it, and enlarging the opening so made by exercising with a tenotome an oval fragment three-quarters of an inch long and three-eighths of an inch wide. Attention was then directed to the original opening in the superior maxillary sinus, and a pair of throat forceps was inserted in the frontal opening and thrust towards that in the maxillary, and *vice versa*, until the obstruction which was present, and which appeared to be a small polypus, was removed, and direct connection thereby established.

This however, was of very short duration, and when seen again after an interval of a week no drainage was obtainable from either of the two openings, and the superior maxillary bone on the near side was bulging.

On the 10th of May the patient was again put under the influence of a general anæsthetic, and the frontal sinus again opened a little below the first opening, and a square piece of bone removed.

It was then observed that the entire sinus was completely filled by the growth, which was strongly attached to the bony septum that separated the left and right frontal sinuses. Destruction was advised and carried out, and a post-mortem examination made.

Result of Post-Mortem Examination.

The left frontal sinus was wholly occupied by the growth, which extended right down into the superior maxillary sinus; the fifth upper molar tooth on this side was pushed out of its socket, and was carious, and was easily removed by the finger. Inferiorly, the growth was rapidly forcing its way through the nose and underlying palate.

A portion of the growth was retained for microscopical examination and sent to Professor James Ritchie, who very kindly examined it and reported as follows:

"The growth shows the structure of a typical squamous epithelioma of a very cellular character. There are numerous early cell nests, with processes of tumour cells. The bony laminæ are separated by a myxomatous and fibrillar connective tissue, which is permeated by tumour cells. Numerous polymorphonuclear cells are present in the surface layers."

It is owing to the comparative rarity of this class of tumour in this region in the horse that the case is placed on record.

REFERENCE.

1. Share Jones. . . . "The Surgical Anatomy of the Horse," 1906, Part 1, p. 106.

INTERESTING CATTLE CASES.

By J. R. RIGBY, M.R.C.V.S.
(*Lytham.*)

The following cases seem worthy of record. I have not seen any of a similar nature before this year, nor have I noticed any mention of such conditions in British veterinary literature. All four cases, while differing from each other in some degree, seem to have something in common, and may perhaps be due to the same cause.

Case I.

The patient was a red and white crossbred cow, aged, dry, and not in calf. Along with about forty others, this cow was turned out at grass on a farm twenty miles away. On a very hot afternoon in June she attracted the cowman's attention by leaving the other cattle, and, rushing along the fence, swishing her tail, bellowing and showing signs of great excitement. She was housed, and on examination it was found that the skin on many of the white parts of her body was swollen red, and very painful.

The owner, whose farm is quite near to me, described her condition fairly accurately, a dressing for the inflamed parts was sent, and at the first opportunity I went over to see her. By this time—five days after the attack—she was rather better, still very dull and moving stiffly, but eating a little and not in much pain, except when touched.

All white parts were now affected, with the exception of a spot on the forehead, the upper parts of the udder and inner parts of the thighs, and a patch on the dewlap. The tail and hind legs were scaly but not much affected.

The skin on all other white parts was swollen, hard, painful, and red or bluish red in colour; the smaller spots felt like plaques in the skin, the larger patches were leathery and showed the lines of swollen lymphatics. The swelling was clearly defined, it ended sharply at the periphery of the white, the adjacent red skin being quite normal. Slender projections of white into the red, and thin strips of white, connecting two white marks showed the swelling as distinctly as the layer areas, and isolated spots as big as a crown piece were also affected. On each side of the body behind the shoulders there was an inflamed area roughly twelve to eighteen inches in diameter, pressure on which elicited a groan from the patient. The lower part of the abdomen was considerably swollen, due to gravitation œdema from these two areas. There was no crepitation.

The muffle was bluish red in colour, and was desquamating in patches; the lower part of the udder and the teats were covered with a dark, red scab, and bled if not carefully handled.

A few days after my visit, the cow was floated home and afterwards I saw her at intervals. In about a fortnight the skin began to lift at the edges of the affected parts, in some places leaving clean skin beneath, in others disclosing suppurating areas of considerable size. These were several weeks in healing and many hair roots were destroyed, the parts being sparsely covered by twisted hair. Resolution was complete in the small spots and also in the udder. Treatment consisted of tonics and antiseptics internally, with emollients externally, and dusting powders in later stages. The cow was kept up for a month and was then turned out with a light sheet covering the sore parts.

CASE II.

Subject.—A shorthorn heifer, aged 20 months, red roan with white markings, and white from knees and hocks down, except near fore, which was white on pastern only.

This animal had been noticed lame a few hours before my visit. She was in a field along with other young stock, and it was here I saw her. The owner thought she was "starting with foul," but it was very evident there was something more than this. Her appearance was most dejected; she was standing with back slightly arched, abdomen tucked up, head lowered, ears drooping, saliva running freely from her mouth. Eyes were sunken and bloodshot, with mucous discharge which had run over the cheeks and had collected in the inner canthi.

All four legs were swollen and the white parts were covered with a yellowish exudate. In the hind legs the swelling extended upwards into the perinæum, but in this region was not of marked degree, and there was no exudation above the hocks. When moved she walked very stiffly. While we watched her, she left the other beasts and wandered aimlessly along the hedge, with head down, in a dazed manner.

She was housed, and closer examination revealed that the exudate was a gummy fluid issuing from numerous vesicles on the white parts of the legs, and from these parts only. On the near fore leg there were no vesicles above the pastern, whereas in the other three they extended to the knee and the hocks. Other white or light roan markings were found swollen, hard and slightly painful, chiefly about the flanks, but one large plaque as big as a dinner plate in the dewlap. The skin of the ears was in a similar state. In these parts there was no vesication. On account of the salivation, the mouth was carefully examined, but nothing abnormal could be detected. The muffle was tender and bled when the heifer was handled, but was not discoloured.

On the following day the heifer looked brighter and was eating a little; salivation had almost ceased. The muffle was now purple in colour and was desquamating; the eyes showed an intense conjuncti-

vitis and clots of muco-purulent material as large as hazel nuts were collected in the inner canthi. There seemed to be interference with vision, the heifer stared wildly when approached, was excitable, and when turned in the yard, stumbled over any object she happened to meet. In the white marks there was little change from the previous day.

From this time recovery was uneventful, occupying about ten days. There was desquamation of the skin of the legs, ears, and muffle, but not from the other parts.

Treatment.—A laxative and emollient dressings.

It ought to be mentioned that a brook, bordering the field in which this heifer was kept, had been cleaned out the previous day and a quantity of water hemlock was lying on the bank. This, however, did not appear to have been touched, nor were the symptoms suggestive of poisoning by *cicuta virosa*.

CASE III.

Subject.—Light roan cow, 4 years old, calved about four months.

The owner called me in to this cow on account of her showing uneasiness and signs of pain. She was up and down every few minutes; when on her feet, she was continually whisking her tail, swinging from one side of her stall to the other, turning her head to her flank and kicking at her belly, or lashing out backwards; when down she was quieter, but at frequent intervals thrust her hind leg forward violently.

Pulse was 84, temperature 102.4, appetite in abeyance and milk yield greatly diminished. Fæces were scanty, dark and annulated. There was an area of great tenderness from the root of the tail to the anterior borders of the ilium, and extending the full breadth of that region. This was covered with a yellow, sticky exudate, exuding from vesicles scattered plentifully over its surface. Pressure here caused pain, and this seemed to be the cause of the cow' suneasiness. When turned out into the field, she walked a few yards with head down as if about to graze, and would then stop, kick out violently and throw her head round with tongue extended towards her loins.

I could find no other part affected, the muffle and udder were normal. While I had in mind the two previous cases described, I attributed the symptoms in this case to intestinal stasis, auto-intoxication, and disturbance of skin function due to absorption of toxins.

A purgative of aloes and mag. sulph. was prescribed, followed by stimulant powders of nux vomica, ammon. carb., etc. The loins were dressed with an emollient cream, which, the owner stated, rapidly allayed the irritation, and in a few days the cow was all right again.

Now comes a curious sequel, which seems to bring this case into line with the previous one. I saw the owner a few weeks later, and

he told me that a few days after my last visit the cow's teats became discoloured and bled when she was milked. The skin of her ears also became sore and scaly. The skin was sloughed from the sore part in the region of the loin, but came off very slowly, having sound skin beneath.

CASE IV.

Subject.—A grizzled blue cow, white legs, aged, calved several months, almost dry.

Usually a quiet animal, this cow first signalised a departure from the normal by knocking her owner off his stool as he was milking the next cow, and by kicking when anyone approached her or even passed behind her. When she was milked it was noticed that the two fore teats were swollen, discoloured and very painful. When I saw her next morning all the teats were affected and looked as if they had been subjected to the action of a severe blister. The two fore teats were crusted and dark coloured, due to bleeding while being milked the previous night. In each hind teat the whole of the skin was elevated $\frac{1}{8}$ to $\frac{1}{4}$ of an inch, constituting one large pale yellow vesicle. The udder itself showed no discolouration or vesication.

I asked if any dressing had been applied and was handed a bottle of black oil of the usual type. A little of this had been smeared on the fore teats the previous night, but no dressing of any kind had been put on the others. The cow showed other symptoms besides these udder lesions. Her eyes were bloodshot and appeared slightly sunken owing to swelling of the surrounding parts. The muffle was tender and was peeling slightly ; discolouration was not apparent, the natural colour being black.

Each fore foot bore two vesicles, one in front of, the other behind, the interdigital space, and each hind foot showed a single vesicle on the external bulb of the heel. All these were discharging a yellowish sticky fluid.

The skin around the vulva was slightly discoloured, with petechial spots.

Pulse and temperature were practically normal and there was little constitutional disturbance.

Treatment.—A laxative was given, and the teats were dressed with an emollient, milking being discontinued.

The minor symptoms disappeared in a few days. The vesication on the teats dried up into a thick, black scab, which fell off in about three weeks, leaving the teats quite clean.

The etiology of these cases seems rather obscure. Cases I and II I attributed at the time to solar influence. Case I occurred on an

intensely hot day, when to a sultry east wind was added the heat of a scorching sun, and Case II on a very hot day of brilliant sunshine, in July.

Case I especially suggested this cause, the parts least affected being the inner sides of the hind legs and the higher parts of the udder, protected in some degree from the sun by the flanks. Friedberger and Fröhner describe " gangrene of the white marks," which may be caused by the sun's rays, or may be due to certain fungi, and treating of the condition " Fagopyrismus," the possibility of these two factors operating in conjunction is discussed.

Regarding gangrene of the skin, Hutyra and Marek state that " in the unpigmented and perhaps sparsely haired skin, the chemically acting (ultra-violet) rays of the sun produce hyperæmia on prolonged and direct exposure, and soon after erysipelatous redness and inflammation, and if their effect on the skin is very intense, they may finally cause death of the skin in these places."

But if the sun's rays were responsible for the first two cases, they certainly had no bearing on the last two. Case III occurred in cool, cloudy weather, towards the end of August, and Case IV at the beginning of November ; and I now tend to the opinion that in all the cases some fungus may have been the primary cause, possibly acting in conjunction with sunlight in the first two cases, in which the implication of the white marks was such a pronounced symptom. Hutyra and Marek give the following symptoms of Clover Disease, due to generous or exclusive feeding on Swedish clover :—

" In cattle, the skin of the extremities, of the udder and of the lower belly are favourite sites of the eruption. In a severe attack these parts of the skin become dark-red to bluish-red in colour ; considerable tenderness and swelling may be noted, sometimes followed in places by vesicles, and then a large quantity of yellow-coloured gummy fluid exudes upon the skin, which soon dries into rather thick scabs. Collections of pus then form, whereupon it exudes from fissures in the scabs, which have in the meantime become cracked, or a purulent layer is disclosed after falling away of the scab, which generally takes place within fourteen days. There may be inflammation of lymphatic vessels with formation of abscesses along their course. In the case of an intense intoxication the affected portions of the skin may become subject to dry necrosis. Some animals presented the symptoms of a purulent conjunctival catarrh."

The similarity of these symptoms to those I have described is very noticeable, but the cause ascribed, viz., feeding on Swedish clover, is not applicable. All the cattle were on old pasture, and in the last three cases grass was very short and scanty.

Haubner, however, ascribes clover disease to fungi and Friedberger and Fröhner state that " the true source of the trouble is probably to be sought in the mould (*uromyces apiculatus ?*) "

Is it possible that the late dry summer was unusually favourable to the propagation and growth of the various fungi ? I have certainly seen more cases of actinomycosis this year than I used to before the war, when the disease was rather rare in this district.

During the summer, too, polyuria in horses was very prevalent, not only in town horses, but also in those on farms where forage was good and the usual causes of this condition were precluded.

These theories are put forward as a possible explanation of the cases I have described, but I should be glad to hear if other practitioners have met with similar conditions, and, if so, to learn their conclusions regarding etiology.

SUBCUTANEOUS LIPOMA.

By EDWARD MORGAN M.R.C.V.S,. D.V.H.
Puerto Cabello.

Subject.—A three years old bull.

The neoplasm was situated on the right side, at the border line or junction of the abdomen and thorax near the distal end of the last ribs, from which it was suspended. At a distance it appeared something similar to the pouch of a marsupial. Where it was attached or suspended from the body of the animal it was confined to an area of only a few inches, whence it expanded towards its distal end. Externally, around its upper third, the skin was roughened, but the lower two-thirds were smooth and yielded to slight pressure, which made one think at first that it was a case of hernia, and that the intestines were enclosed inside the distended skin. The post-mortem examination revealed the following. The skin was firmly attached to the subcutaneous tissue, particularly so around the base or roughened area. On longitudinal section through the neoplasm, in the centre was a zone covering several inches of soft adipose tissue containing only a few narrow bands of connective tissue. The remainder of the neoplasm was distinctly lobulated owing to the presence of connective tissue, and on cutting through offered a certain amount of resistance to the knife. The weight of the lipoma was twenty-seven pounds. Although I made a very careful examination, in no other part of the carcase could I find any other abnormal new growth.

This animal was brought up from the " plains " to the fattening fields (potreros), where he was kept for twelve months. (We are unable to trace its history further.) At that time the neoplasm

appeared more or less the same size as it was at the time of slaughtering. The other animals which were brought up at the same time soon fattened, but this animal remained very lean until the spring of this year, when a change for the better was noticed, as the animal seemed to put on some flesh. As soon as he reached a fair store condition he was dispatched for this place to be slaughtered. This animal withstood a journey of one month last year, and again this year made a journey of about a week's time along a dusty, rough road with hardly any food, so as to reach this station. The neoplasm appeared to be a great deal of hindrance to the animal when he moved along at a quick pace, but at a steady walking pace he journeyed along as well and better than many of the others, which have not arrived here yet.

General Articles.

SOME NOTES ON CHENOPODIUM.*

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Chenopodium is also known as American wormseed, Mexican tea, Spanish tea, Jesuit tea, Jerusalem tea, and Jerusalem oak. These terms are applied to the plant *Chenopodium anthelminticum* Linnæus, also known as *Chenopodium ambrosioides anthelminticum* A. Gray, a member of the Chenopodiaceæ or Goosefoot family of the order Chenopodiales. In the same genus is the ordinary lamb's-quarters, or pigweed, used as a food plant in this country and formerly so used by the Indians. Other species of this genus have been used in medicine as anthelmintics, antispasmodics, expectorants, emetics, emmenagogues, and in treatments for chorea. Chenopodium is said to have been naturalised in this country from tropical America, and to occur in waste places from New England to Florida and California. It is very common in Virginia, Maryland, the district of Columbia, Arkansas, and Florida, and is cultivated for the market in parts of Maryland, especially in Carroll county. Moillet and Carreno state that as "epazote," chenopodium is known almost all over Mexico.

The plant grows to a height of 2 to 3 ft. (Brüning† says 2 to 5 ft., quoting an early Dispensatory), and may be distinguished by the odour of the volatile oil of chenopodium which is noticed when the leaves, stem, or seeds are crushed. According to Brüning, the plants yield 1.5 to 2 per cent. of this oil. Keith‡ states of oil of chenopodium: "It is an ethereal oil obtained from an American plant resembling

*Reprinted from the *Therapeutic Gazette*, Vol. 34, 3rd S., No. 4, April 15, 1918.
†Brüning, H.: *Zeits. f. Exper. Path. u. Therapie*, 1906, 3, pp. 564-587.
‡Keith, R. D.: *J. Trop. Med. and Hyg.*, 1916, 11, pp. 130-131.

the cabbage." As chenopodium bears no resemblance to cabbage and belongs to a different order of plants, this statement appears to be based on misinformation. A recent statement in the *Boston Medical and Surgical Journal* (v. 175 (23), p. 438) to the effect that the principal sources of chenopodium are in the islands of Java and Sumatra and the Levant is probably based on a confusion of American chenopodium and the Levant santonica.

In anthelmintic medication, the bruised fruit has been given in doses of 20 grains in an electuary ; or the expressed juice of the fresh plant used in tablespoonful doses ; or the decoction made by boiling an ounce of the fresh plant in a pint of water given in 2-oz. doses ; or the fluid extract given twice a day for three days in doses of from 15 minims to a drachm ; or the oil of chenopodium derived from the plant by distillation has been given, according to various published reports, as follows :—

With preliminary purgation with Epsom salts, and without preliminary purgation : in doses of 3 to 10 drops, 15 drops, 16 drops, 10 minims, 15 minims, 16 minims, 17 minims, 21 minims, 30 minims, and 0.22 mil to 1 mil, for adults ; the dose is given once or repeated for a total of two or three doses ; the interval between doses is a half-hour, an hour, two hours, four or five hours, and twenty-four hours ; the oil is given in sugar, molasses, honey, milk, emulsion, capsules, or globules ; it is followed by Epsom salts, Glauber's salts, castor oil, castor oil and chloroform, black draught, unspecified cathartics, or by no purgation whatever ; the interval between the last dose of oil and the dose of purgative is usually two hours, sometimes four hours ; the oil of chenopodium is occasionally combined with castor oil, chloroform, and oil of eucalyptus. Most writers advocate the use of three doses with a one- or two-hour interval between doses. It may be noted in passing that a minim and a drop of oil of chenopodium is not at all the same thing. A casual test with a pipette shows over two drops to the minim, a given number of minims, therefore, constituting more than double the dose of the same number of drops. The maximum dose is that given by Keith—three doses of 30 minims each at hour intervals. Heiser* states in a discussion of Keith's paper that Keith gives 10 minims each morning for three mornings, and then follows the last dose with castor oil after a two-hour interval, but Heiser appears to have quoted Keith wrongly in this respect. The dose method attributed to Keith by Heiser has been recorded by Thornburg† and by Coutant,‡ the latter reporting a case of severe poisoning from this treatment. I regard this method

*Heiser, V. G. : *Journal A. M. A.*, Aug. 7, 1915, pp. 526-527.
†Thornburg : *Journal M. St. M. A.*, Feb., 1917.
‡Coutant, A. F. : *Journal A. M. A.*, Nov. 25, 1916.

of treatment, giving chenopodium every morning for three mornings with no purgation until the third day, as the worst of the methods so far proposed, for reasons already published by Hall and Foster*—*i.e.*, that oil of chenopodium is distinctly constipating and should be given with a purgative rather than left for two 24-hour intervals before purgation. Experimental work in this laboratory indicates that the prompt administration of castor oil has very distinct protective value against the irritant and toxic properties of oil of chenopodium, saving the lives of dogs that were given doses found to be lethal when given without castor oil, and it appears to be superior to any other purgative for use with oil of chenopodium. In numerous experiments we have found the administration of the oil of chenopodium in soft or elastic capsules to be the most satisfactory mode of administration. On the other hand, Darling, Barber, and Hacker† found magnesium sulphate superior to castor oil in clinical experience, and did not obtain as satisfactory results from the soft capsules used by them as from hard capsules. This matter needs additional consideration, owing to differences in the composition of various makes of soft capsules and owing to the effect of the contained drug on the solubility of capsules of any given composition.

Millspaugh‡ states that chenopodium is said to have been used by the American Indians as a vermifuge and as a treatment for dysmenorrhea. Weeds that are notoriously bitter or pungent are very commonly regarded by primitive peoples as potent plants, either as drugs or for other purposes, and it is unlikely that such a highly and distinctly odorous plant as chenopodium would go uninvestigated. And it would only take a moderate amount of investigation, in all probability, to establish the potency and the particular value of chenopodium. Primitive peoples, children, and persons of low mentality and little education are especially subject to infestation with parasites, this being a result of the unsanitary surroundings and habits common among those mentioned. Where infestations with such worms as ascarids are common, as was probably the case among the Indians, the connection between the ingestion of chenopodium and the passage of these large worms would not be hard to imagine or establish. Millspaugh states that the Indians also used spigelia (pinkroot), another native anthelmintic, before Columbus discovered America.

Following the Indian's use of chenopodium, there has been a long " wormseed tea " period, during which period this valuable

*Hall, M. C., and W. D. Foster : *Journal A. M. A.*, June 30, 1917, pp. 1961-1963.

†Darling, S. T., M. A. Barber, and H. P. Hacker : *Journal A. M. A.*, Feb. 23, 1918, pp. 499-507.

‡Millspaugh, Chas. F. : Medicinal Plants, v. 2, 1892.

anthelmintic was largely used as a home remedy on the farms and by the coloured " mammies " of the South. At the same time our medical men very generally ignored this valuable anthelmintic and used imported, and in the main less effective, drugs. An appreciation of chenopodium, which began before the outbreak of the present war, has been intensified by the shortage of imported drugs since the war began, and at present chenopodium is being very largely used and is receiving an increasing amount of study and attention.

According to Nelson,* oil of chenopodium was first investigated by Garrigues in 1854 and reported as containing a hydrocarbon boiling at 176° C. and a liquid of the formula $C_{10}H_{16}O$. The same authority states that Schimmel & Co., by fractionating at reduced pressure (the oil exploding on attempted distillation at atmospheric pressure), separated a liquid, designated as ascaridol, which constitutes the major portion of the oil and to which the peculiar chemical and medicinal properties are due. Ascaridol is a yellow oil with the formula $C_{10}H_{16}O_2$. Nelson came to the conclusion that it was an unstable dioxide.

Investigations of the action of oil of chenopodium naturally follow two independent but correlated lines of work. One line is an investigation of its actual efficacy as an anthelmintic, since that is practically the only use of the drug ; the other line is an investigation of the physiological action of the drug on the host animal, since anthelmintics are practically always poisonous to some extent, and it is desirable that we know their incidental effects as well as the dose and mode of administration that will give adequate anthelmintic action with a minimum injurious effect on the host. This last line of investigation has been pursued by Salant and his collaborators in the U.S. Bureau of Chemistry for some years. Studies of the anthelmintic efficacy have been made by a number of physicians in this country and abroad with clinical findings as a basis, by Hall and Foster in the U.S. Bureau of Animal Industry, and by myself in this laboratory with animal experimentation as a basis. These experimental findings have been published in part in the preliminary note by Hall and Foster, and will be given in detail in subsequent papers. The experiments indicate that in animals having a simple digestive tract, as in the case of man and the carnivora, oil of chenopodium is more effective against such worms as ascarids than any other anthelmintic now in use.—(*Journal of the American Veterinary Association.*)

*Nelson, E. K.: *Bu. Chem. Circ.*, 73, 1911, pp. 1-10.

INFECTIOUS ABORTION OF CATTLE.*

By L. E. W. BEVAN, M.R.C.V.S.
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INFECTIOUS abortion of cattle is one of the most serious diseases of stock, and causes enormous losses in many parts of the world. In Great Britain it is regarded as second only in importance to tuberculosis, while in the United States of America the exact financial loss cannot be even approximately estimated ; but from the fact that the disease exists in all sections of the country, both in dairy and range cattle, it can safely be stated that the direct loss reaches into millions, while the potential loss is likewise enormous and inestimable. In New Zealand this disease is costing the colony annually from £200,000 to £300,000, an estimate based on the increased milk-yield which would result through its eradication.

The presence of this specific disease among our herds in Southern Rhodesia, which was definitely proved by laboratory tests in 1914, constitutes a grave menace to our pastoral industry, and one which should not be treated with indifference. Already it is found to be more prevalent than it was at first suspected, and it is probable that its distribution is considerably wider than is generally admitted. The insidious and highly infectious nature of the disease renders it all the more dangerous, and it is often overlooked until a serious shortage in the crop of calves forcibly draws the stockowner's attention to its presence. Unfortunately the disaster is not limited to the loss of calves and dairy products, but when a farm is infected, movements of cattle to and from it are restricted, and as a grazing property its market value is seriously reduced. It therefore behoves every stockman to obtain a knowledge of the disease, in order that he may recognise it at the onset, and so take steps to arrest its further progress. It is with a view to imparting such knowledge as briefly and simply as possible that these notes are written.

Although there are a number of circumstances which will cause an animal to cast its young before the full period of gestation, the most common cause in this country is the infestation of the pregnant female by a particular microbe which invades the womb, and there sets up changes which interfere with the nutrition and development of the calf, and frequently cause its death and premature expulsion.

The infectious nature of the disease is generally indicated by the fact that a number of cows abort in succession ; that a tendency to abort persists ; that the average period of pregnancy at which abortion is detected is from five to seven months ; that other causes of abortion

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e.g., injuries, febrile diseases, atmospheric influences, faulty food or water, poisons, etc., may be excluded; and possibly by the circumstances that abortions have only occurred since the introduction of certain cows or bulls to the herd.

In the majority of cases abortion takes place without effort or inconvenience. There may be no premonitory symptoms, or there may be noticed some uneasiness on the part of the cow; she may make "a bag" rather suddenly, her vulva may be swollen, and a blood-stained mucous or a yellowish discharge may come from it. Frequently the membrances are retained, and are usually difficult to remove. Their retention may give rise to the usual complications. After the abortion a thin yellowish discharge may continue to come from the genital organs for several weeks. Subsequent œstrum may be unduly frequent, but the cows may not become pregnant, or may abort again, sometimes as often as three times a year. These symptoms are by no means constant, indeed, are frequently so ill-defined as to be overlooked. Briefly, a very low " calf-crop " a number of cows showing a vaginal discharge or retained " after-birth," an abnormal number of cows returning to the bull, the discovery of aborted calves not fully developed, may be the only warning of the existence of the disease.

The character of the aborted materials should be noted. As a rule the fœtus is dead; but it may be alive, in which case it is weakly and generally dies. It may be mummified, but it is rarely putrid. Its umbilical cord may be dropsical. The fœtal membranes may look macerated, the outer membrane having a thickened or leathery appearance. The latter may becovered with an exudate of a light brownish-yellow colour, and sometimes of a chocolate colour, varying in consistency from that of a fluid pus to a tough dough. This exudate is particularly abundant around the " cotyledons " of tufts which are studded over the outer envelope, and which graft the fœtus to the mother. In advanced cases these tufts may be softer than normal and pulpy; they may be distinctly yellow in colour.

The cause of the disease is a microbe or bacillus which gains entrance into the animal ingesting contaminated food or water, or may be transmitted by a bull which can pass it on from sick to healthy in the act of " service." The causal organism is present in the uterine exudate of an affected cow, in the discharge which comes from the genital organs after abortion, in the stomach fluid of the fœtus and in the fœtal envelopes. Its distribution, therefore, is easy and widespread. It can retain its virulence for about seven months, if kept in fluid material and free from putrefaction. Desiccation has a destructive influence on its vitality. From this it may be reasoned that the prevailing sunshine

and dryness of the Rhodesian winter is against the persistence of the infection outside the animal, and that the watering of cattle from water pools is to be avoided. It is thought that the microbe does not propagate outside the animal body under natural conditions.

Abortion bacilli do not remain for a long time active in the bodies of non-pregnant animals or persist in the womb of a cow which has aborted. In some cases they cannot be found a month after abortion. This, as will be seen later, is a factor of great importance in dealing with the disease.

From the foregoing, it will be seen that the infection is easily spread by affected in-calf cows introduced to a clean herd, by a bull which has served an affected cow, by cows which have aborted, and by the dissemmination of the microbe in the virulent materials, *i.e.*, the exudate or discharge from an aborting cow, the aborted fœtus and its envelopes. This material may be transported in soiled manure, on the bodies of aborting animals and their companions, on the hands, clothing and boots of attendants, by dogs, jackals and vermin, and principally by food and water contaminated by the discharges of an affected animal.

Once established in a herd, the disease persists in pregnant infected cows, and in cows which have aborted for a short time after the act. In this respect the so-called " queen " cow is a factor of great local importance. It may also persist through an infected bull and through the agency of animals other than cattle. The microbe also remains in contaminated pastures, and in shelters, buildings and kraals. The bacillus being easily destroyed by desiccation, it is probable that the infection remains longer in moist and shaded places.

It is, however, a feature of the disease, and one of great practical importance, that when no fresh infected cattle are introduced to an infected herd the disease tends to die out. Also, as has been previously pointed out, the infection does not remain long in the bodies of non-pregnant animals, or persist long in the womb of a cow which has aborted. In other words, if the animal is not pregnant the microbe can produce no ill-effects, and in such circumstances may actually set up a well-marked degree of resistance or immunity. Upon such factors, which have been proved by practical experience and confirmed by scientific observation, methods of dealing with the disease have been devised.

It is important that the first cases of the disease should be detected. If they are missed, the cumulative effects may be enormous. When the slightest suspicion of infectious abortion exists, the owner should

notify the Veterinary Department, and by a simple test the accuracy or otherwise of his diagnosis can be proved, and every effort be made to arrest the disease at its onset.

The measures which will probably commend themselves will be the isolation and testing of animals showing premonitory symptoms, the segregating and vaccinating of animals which have aborted, the careful destruction of all virulent material and everything contaminated or likely to be contaminated, preferably by burning, and if possible on the spot. Experiments conducted at the laboratory have shown that arsenic has a destructive influence upon the microbe of the disease, and thus the dipping of cattle is an easy and effective method of disinfecting an animal whose body is contaminated with infective discharges from itself or others.. The external and internal genital organs of infected females may be syringed with a weak antiseptic solution, such as corrosive sublimate solution, 1 in 4,000 ; and contaminated buildings shelters, kraals, etc., should be saturated with a reliable disinfectant, *e.g.*, carbolic acid 3 per cent. watery solution, Jeyes' Fluid, Kerol, Izal, etc. Infected pastures, and especially moist places likely to be contaminated, should be avoided, and a supply of pure water beyond reproach should be supplied.

The disease is essentially one of the pregnant animal, and tends to die out in the cow which is not " in-calf " in a very short time, sometimes in four to six months. If the bull is withheld from the infected animals for this period, a procedure which is often possible in this country, where there is a well-defined calving period and thus a corresponding period of " service," the infected cows will have derived a certain degree of immunity sufficient to carry them through their next period of pregnancy.

As has been pointed out, the disease tends to die out naturally in an infected herd ; in other countries this occurs in about three years when no new strain of infection is introduced. Moreover, an animal which has aborted once, after a certain time ceases to do so. In other words, under natural conditions immunity becomes established in the individual and in the herd. It is believed that the presence of the microbe in the non-pregnant animal can produce no harmful effects, but being present as a foreign body acts as a vaccine and gives rise to immunity. On this basis a vaccine treatment has been devised with a view to imitating and hastening the process which takes place under natural conditions. The vaccine is issued *gratis* by the Veterinary Department, and consisting as it does of dead organisms, can do no harm. The results reported from those applying it are so favourable

that its use is to be recommended as an adjunct to the other measures previously described.

It is always advisable to keep a special bull for the " service " of cows which have aborted, and the sheath of this animal should be frequently flushed with a mild antiseptic solution. Care should always be taken to not re-introduce the disease with new arrivals. In addition a portion of the farm should always be kept free from cattle, and, if necessary, a hay stack should be available to supplement the natural grazing. Such a procedure is of the greatest value not only as a precaution against this disease, but in connection with many other infective maladies of stock in this country.

Finally, when an owner of cattle has reason to believe that infectious abortion exists upon his farm, he should report his suspicion to the nearest official of the Veterinary Department, or write direct to the Chief Veterinary Surgeon, Salisbury. He should state the species of animals affected, the numbers and dates of abortion, and, if possible, the date of " service " of the animals aborted, and should record the yield of calves upon the property for the last few years. He should describe as accurately as possible the circumstances of the outbreak and the symptoms noted, the suspected source of infection and all other factors of possible importance. He should record recent arrivals and departures of stock to and from his farm.

The veterinary officer will be able to obtain material for examination at the laboratory, such as smears of discharge from the aborting cow, material scraped from the tufts on the after-birth, or material from the stomach of the fœtus. Tampon tubes will also be supplied for the collection of suspected material to be forwarded to the laboratory for cultural and biological tests, and blood will be collected by the " pipette method " for the application of the agglutination test, which is one of the greatest accuracy for the identification of this disease in the infected animal either before or after abortion.

The importance of this disease to the individual and to the pastoral industry in general cannot be over-estimated, and every stock-owner should, for his own sake as well as for the good of his country, be on his guard against it.

INDIAN ARMY ORDER FOR THE CONTROL OF SURRA IN CAMELS.

As biting flies of the order Tabanidæ are concerned in the transmission of the disease Surra from affected to healthy animals, it is considered that reduction of the prevalence of the disease and mortality

arising from it can very materially be effected by a systematic crusade directed towards the destruction of these flies, their eggs, and their arvæ during the fly season.

It has been decided, in the first instance, to conduct a " fly survey " in the northern and north-western parts of India where Surra chiefly prevails and to map out " surra areas." This survey will be undertaken under the guidance of the Imperial Pathological Entomologist to the Government of India, whose head office is at Pusa, Behar, and any evidence as to the existence of " biting fly " areas, stations, or camps occupied by troops should be sent to him through administrative veterinary officers of formations concerned.

Organised " fly hunts " will be instituted by commanding officers of camel corps during the fly season—say, from the middle of May to the middle of October—and periodically carried out by them at all watering places used by camels and within a mile of the same, whether such watering places are at permanent camps or at temporary camps on a line of march route.

" Fly hunts " will be directed towards (*a*) eggs, (*b*) flies, and (*c*) larvæ, a sufficient number of sarwans being detailed for the purpose, acting under the guidance of the veterinary assistants of the unit concerned.

For identification the following information is given :—

(*a*) The female tabanidæ lay their eggs on the under surface of blades of grass growing along the edges of streams and the margins of jheels and pools. The eggs are laid in brown, roundish masses about the size of an ordinary pea, each mass containing from 80 to 100 eggs. They are very easily detected, and the importance of their collection and destruction by burning will be fully realised. When eggs are hatched out they appear on the blades of grass as shells only.

(*b*) Larvæ from the hatched-out eggs drop from the blades of grass into the soft wet earth round the edges of streams, pools, jheels, etc., and can be found by lightly digging or disturbing the surface layers of earth after the manner of finding " grubs " of other flies in garden earth, manure, or refuse. The larvæ of the tabanidæ are yellowish-white in colour, elongated and cylindrical, $\frac{3}{4}$ in. to $1\frac{1}{2}$ ins. in length, about $\frac{1}{4}$ in. in diameter, and have a number of fleshy rings or bands round the body.

(*c*) Tabanidæ flies are large and of stout build, varying in size from $\frac{1}{4}$ in. to 1 in. in length. The head and eyes are large. The thorax and abdomen are clothed with short hair, and

often soberly striped or banded. The abdomen has seven visible segments. The female flies only are concerned in piercing and blood-sucking, and as they do not operate, as a rule, beyond a mile from water, where they lay their eggs, or, in other words, practise their motherhood, they are usually to be found within that radius or attacking animals within that distance.

It is realised that the " fly season " of this year is now nearly over, and that proper measures for destruction cannot be systematically put in force until next season, but there is still time to do a certain amount this season. Officers commanding camel corps will, therefore, adopt the above measures without delay.

A record of " fly hunts " will be kept by units concerned.

DISLOCATION OF THE EYE-BALL.

By ABRAHAM JOSEPH.
Veterinary Sub-Inspector, Travancare.

Is common amongst dogs, especially pariah dogs, as they have got the bad habit of fighting against each other, and the paw of the one is pushed behind the eye of the other while fighting. This is rare amongst other animals. It is really an awful sight to see a case of dislocation of the eyeball. The animal will show much pain and is at the same time quite restless.

Successful reduction or reposition of the eyeball may be accomplished without much damage, if the case is attended early and the optic nerve not ruptured.

I have attended six cases during the last six years, of which four were dogs, and the remaining two were cows.

Kind of Animals.	*Cause.*
1. Pariah dog.	By the paw of another dog while fighting.
2. Pariah dog.	By the paw of another dog while fighting.
3. Pariah dog.	By the paw of another dog while fighting.
4. Japanese poodle.	Brought by a lady stating that the dog was run over by a motor car, but there was no other injury to show that it was due to the said accident.
5. Cow.	By the horn of another cow while fighting. The horns of the cow that caused this were bent forward.

6. Cow.	By an extended piece of a bamboo while the cow ran loose in its shed—being frightened during severe thunder and lightning.

In all such cases I used to disinfect and cleanse the eye, and after disinfection enough castor oil applied to the eyeball as well as to the inner sides of the eyelids. Then the smooth end of the handle of an aseptic scalpel or the back portion of an ordinary dressing forceps is passed gently to and fro between the eyelids and the eyeball. The eyelids are then separated, and by gentle and methodical pressure on the eyeball, a trial is made to return the same to the cavity. Always with a suction sound it returns, and fits into its place in the orbital cavity. I had not the necessity to operate on the outer canthus of the eye while reducing the eyeball.

Treatment :—Nothing but simple boric lotion was applied and the eye was protected from sunlight and injury.

Of the cases treated only the last case (6) lost its eyesight, as the injury was great. In all other cases vision was not impaired.

DISEASES DUE TO FILTERABLE VIRUSES.*

In 1907 the author issued a publication discussing the possibility of the transmission of rabies by healthy dogs. He reported a case of a young girl that had come from Smyrna to the Anti-Rabic Institute of Constantinople as she feared infection from her young sister, dead of rabies a few days previously. It was stated that this child had not undergone the Pasteur treatment inasmuch as the dog that had bitten her in the foot five months previously showed no suspicious symptoms and was then alive and healthy. In the medical literature a certain number of analogous cases are described, and in this paper the author discusses the pathogenesis of such cases, which he admits are very exceptional and more interesting from a scientific than from a practical point of view. In the first place it has to be acknowledged, for various reasons which are enumerated, that all these cases of rabies contracted by the bite of a healthy dog are not beyond criticism. Babès was of opinion that these cases of transmission by apparently healthy dogs could be explained by the fact that the animals were suffering from abortive manifestations of the disease such as fever, loss of weight, and irritability, which were quite curable. It seems, however, from the experimental investigations of Konradi [see this *Bulletin*, Vol. 2, No. 2, p. 94 ; Vol. 4, No. 2, p. 62 ; and Vol. 5, No. 2, p. 118], and the

* Remlinger (P.). Comment un chien d'apparence saine peut transmettre la rage." [How an Apparently Healthy Dog may transmit Rabies.]—*Bull. Soc. Cent. Méd. Vét.* 1919. May 15. *Rec. Méd. Vét.* 1919. May 30—June 30. Vol. 95. *Tropical Vet. Bull.* Nos. 10 and 12. pp. 175—181. *Tropical Veterinary Bulletin.*

author himself [see this *Bulletin*, Vol. 6, No. 3, p. 183] on the hereditary transmission of rabies that a somewhat different solution of the problem can be offered. The transmission of rabies from mother to fœtus can be observed to take place in the following conditions :—

(1) On post-mortem examination of an animal dead of rabies one may find fœtuses at a more or less advanced stage of development ; inoculation of the brain of these fœtuses into guinea-pigs sets up rabies.

(2) A very few days before dying of rabies an animal gives birth to quite healthy-looking young, which, however, at a more or less remote date suffer from the disease and succumb.

(3) Some time after having been inoculated with the virus an animal may give birth to progeny, apparently perfectly developed, and which may live for several weeks or even months without showing commencing symptoms of rabies, from which they succumb. The mother still remains alive and in perfect condition, and only dies from rabies some considerable time after its young. This class of hereditary transmission is considered worthy of minute examination. The facts in connection with this particular mode of transmission were first studied by Konradi and in this paper the author describes some experiments which confirm his conclusions.

A guinea-pig inoculated by the author into the foot with " street " virus gave birth fifty days subsequently to three young. One of these succumbed when thirteen days old, and apparently rabies was not the cause of its death. The other two succumbed at the age of thirty-four days, showing very suspicious paralytic symptoms, and transmission experiments showed that they had in fact died from rabies. The mother survived its three young and only showed symptoms thirty-eight days after the death of the last two, and it died from rabies on the day following first symptoms.

It thus appears that rabbits and guinea-pigs are capable of transmitting rabies *in utero* to their young whilst themselves showing all the signs of good health. They may even transmit rabies sometimes for a period of more than a year before succumbing to the disease. In the case of the dog, Konradi observed a fact of somewhat similar nature. A bitch inoculated showed commencing symptoms of rabies eleven days after parturition, and the disease made its appearance in its six young 11, 43, 61, 66, 68, and 69 days' respectively, after birth. There is thus no reason to suppose that the dog behaves in a manner different to the guinea-pig and rabbit, and Konradi rightly insists upon stating that in the matter of the transmission of rabies from mother to fœtus there appears to be no difference among the various

species of animals. Inasmuch as these experiments were performed with " street " virus it seems justifiable to conclude that the same results are obtained in nature.

Roux and Nocard showed that two or three days before the appearance of any apparent change in the demeanour of an infected dog its saliva had become virulent. Various other authors have claimed to have established that the saliva is infective for even a longer period prior to the onset of symptoms (Konradi, fourteen days). If indeed the rabies virus is discoverable in the blood several months before death there is no reason to doubt but that it may also be found during the same period in the saliva. Bertarelli claims to have shown that the virus gains access to the salivary glands by travelling along the peripheral nerves and not by way of the blood stream. The author himself has performed numerous experiments to show that the nervous system becomes infected at a very early stage.

He thus concludes that :—

(1) For some time before the onset of visible symptoms there exists in rabies a stage in the blood or latent stage which is not manifested by any symptom except perhaps by a few attacks of fever.

(2) At this stage the female may be quite capable of transmitting the disease via the placenta to her progeny. It appears justifiable to infer that the animal is also capable of infecting man or other animal at this stage by means of its saliva.

Confirmation of this last point by experimental methods would appear to present considerable difficulties inasmuch as it would seem to indicate the use of a ' street " virus of moderate or slight virulence. Hence, the period of incubation would be of long duration, and consequently also the period in which the saliva would have to be collected and injected. During this latent stage the virus certainly does not pass into the blood except in very small quantity, and thus a large number of guinea-pigs would have to be inoculated with a considerable quantity of saliva and the inoculation would have to be performed either intra-muscularly or subcutaneously ; these animals would thus have to be observed for a long period, and a considerable accidental mortality would occur on account of septicæmia.

In this short note the author submits to a further analysis the results obtained by Konradi and himself in experiments upon the hereditary transmission of rabies, and draws from the results obtained evidence which appears to show that this heredi

EXPLANATION OF CERTAIN CASES OF SPONTANEOUS RABIES IN PUPPIES. REMLINCEK (P.). L'hérédité dans l'étiologie de la rage. Explic tion de certains cas de " rage spotnanée " des jeunes chiens. [Heredity in the Etiology of Rabies. Explanation of Certain Cases of " Spontaneous Rabies " in Puppies·]—*Bull. Soc. Cent. Méd. Vét.* 1919. June 5. *Rec. Méd. Vét.* 1919. May 30—June 30. Vol. 95. Nos. 10 and 12. pp. 196—200.

may be the explanation of certain cases of spontaneous rabies in young dogs. The author is of opinion that in certain conditions and in certain countries in the East where dogs are not kept under observation and the risks of infection from animal to animal are considerable, heredity is by no means a negligible factor in the etiology of canine rabies. He concludes that the young dog may, even though perhaps only exceptionally, contract rabies without having been bitten, scratched, or licked by a rabid animal. The rabies thus does not manifest itself " spontaneously," but is transmitted hereditarily from the mother, which after having been infected by a rabid animal may die of rabies before its progeny or it may survive them. One may observe in such instances several dogs belonging to the same litter, or even the whole litter, contract the disease simultaneously. The multiple infection and the simultaneous onset of the disease in the young animals appears to lend further confirmation to the view that the affection is hereditary in origin.

DEPUTY FISHERIES MINISTER AND EXPERT ADVISERS.

THE Board of Agriculture is being reorganised and regrouped into five main departments, each under an executive head, responsible in the case of the three agricultural departments to the President direct, and in the case of the Fisheries and Welsh Departments to the President through the Parliamentary Secretary, Sir. A. Griffiths-Boscawen, M.P.

Sir A. Griffiths-Boscawen, in addition to his duties as Parliamentary Secretary, has been appointed Deputy Minister of Fisheries.

The following appointments have also been made :—

Sir A. Daniel Hall to be Chief Scientific Adviser to the Board and Director-General of the Intelligence Department.

Mr. Lawrence Hall to be Chief Commercial Adviser to the Board and Director-General of the Land and Supplies Department.

Mr. F. L. C. Floud to be General Secretary to the Board and Director-General of the Finance and Economics Department.

The above form the President's administrative council, which meets twice weekly to consider questions of policy and to secure the co-ordination of the various departments.

Mr. H. G. Maurice has been appointed Fisheries Secretary and Principal Assistant Secretary to the Board.

Mr. C. Bryner Jones, an assistant secretary of the Board, has been appointed Welsh Secretary in special charge of the Welsh Office.

The Council of Agriculture and the Advisory Committee, which are to advise the Board on agricultural questions, depend for their creation on the passage through Parliament of the Agricultural Councils Bill, but it is hoped that they will be constituted shortly.

FROM THE OFFICE OF THE SURGEON-GENERAL OF THE ARMY, WASHINGTON, D.C.

OFFICERS, NETERINARY CORPS, UNITED STATES ARMY.

	On duty Aug. 11, 1919	Sept. 11, 1919
Colonels	0	0
Lieutenant-Colonels	5	5
Majors	54	47
Captains	119	90
1st Lieutenants	255	187
2nd Lieutenants	178	109
Totals	611	438

Correspondence.

To the Editor of THE VETERINARY JOURNAL.

SIR,—Reference the article " Chloral Hydrate, its Use and Abuse in the Army," which appeared in the September number of THE VETERINARY JOURNAL, I fail to understand Capt. Waters' object in combining the use of chloral hydrate and ammonium carbonate in the treatment of colic, even supposing these drugs were chemically compatible.

I believe, however, that chloral hydrate is chemically incompatible with all alkalis owing to a chemical reaction which leads to the liberation of chloroform.

If this reaction is what Capt. Waters aims at, why does he not administer chloroform in a suitable vehicle in the first place?

Assuming for a moment that it would be in order to combine the use of these drugs in the chemical sense, what would be the object from the standpoint of treatment?—Yours faithfully,

S. J. MOTTON.

Penzance, Oct. 10th, 1919.

Obituary.

THE LATE PRINCIPAL J. R. U. DEWAR, F.R.C.V.S.

THE death of Professor Dewar will be heard of with regret by many members of the profession, as his connection with the Royal (Dick) Veterinary College and his operative skill had given him a large circle of friends. Graduating in 1874, he devoted himself for some years to private practice, which he forsook in 1892 to become Professor of Surgery and Obstetrics in the Dick College, occupying this position until the death of Professor Walley, when he became Principal. Resigning from this in 1911, he took over a large farm, but still retained his appointments as Veterinary Adviser to the City of Edinburgh and

the Board of Agriculture for Scotland, and his interest in professional matters was always maintained. He was a Member of Council from 1895 to 1912, and although never acting as President, he held the office of Vice-President for a number of years.

A VERY worthy member of the profession recently passed away at a good old age in the person of Mr. Edward Beddard, F.R.C.V.S., of Wolverhampton. He was vice-president of the Council in 1892 and obtained his fellowship degree in that year. He was a prominent Freemason and the oldest and best rider to hounds in the Albrighton Hunt. He held the appointment of veterinary surgeon to the Wolverhampton Corporation Tram Department for over fifty years. In and around Wolverhampton there were few men better known or held in higher esteem.

DROWNED IN A GHIL.

A FATAL accident occurred near Dohawa, in the Jhelum District, recently by which Mr. D. Meadows, I.C.V.D., lost his life. It appears that Mr. Meadows was duck shooting on a ghil near Dohawa, and in following up a bird he had brought down got out of his depth in the ghil and was drowned.

This distressing accident deprives the Veterinary Department of a promising officer who will be much regretted by his colleagues. Mr. Meadows was keenly devoted to the work of his profession and had specialised on the subject of diseases of camels, and had also shown exceptional talent as a linguist. He was a member of the Royal College of Veterinary Surgeons and joined the Civil Veterinary Department in 1916, being posted to the Punjab. At the beginning of the war he was employed as Superintendent of the Department for the North West Frontier Provinces, and received a commision in the veterinary branch of the Indian Army Reserve in April, 1917. On being released he succeeded Mr. Pool as camel specialist at Dohawa.

NOTICES.

All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C.2. Telephone: Gerrard 4646. Telegrams: "Baillière-Rand, London."

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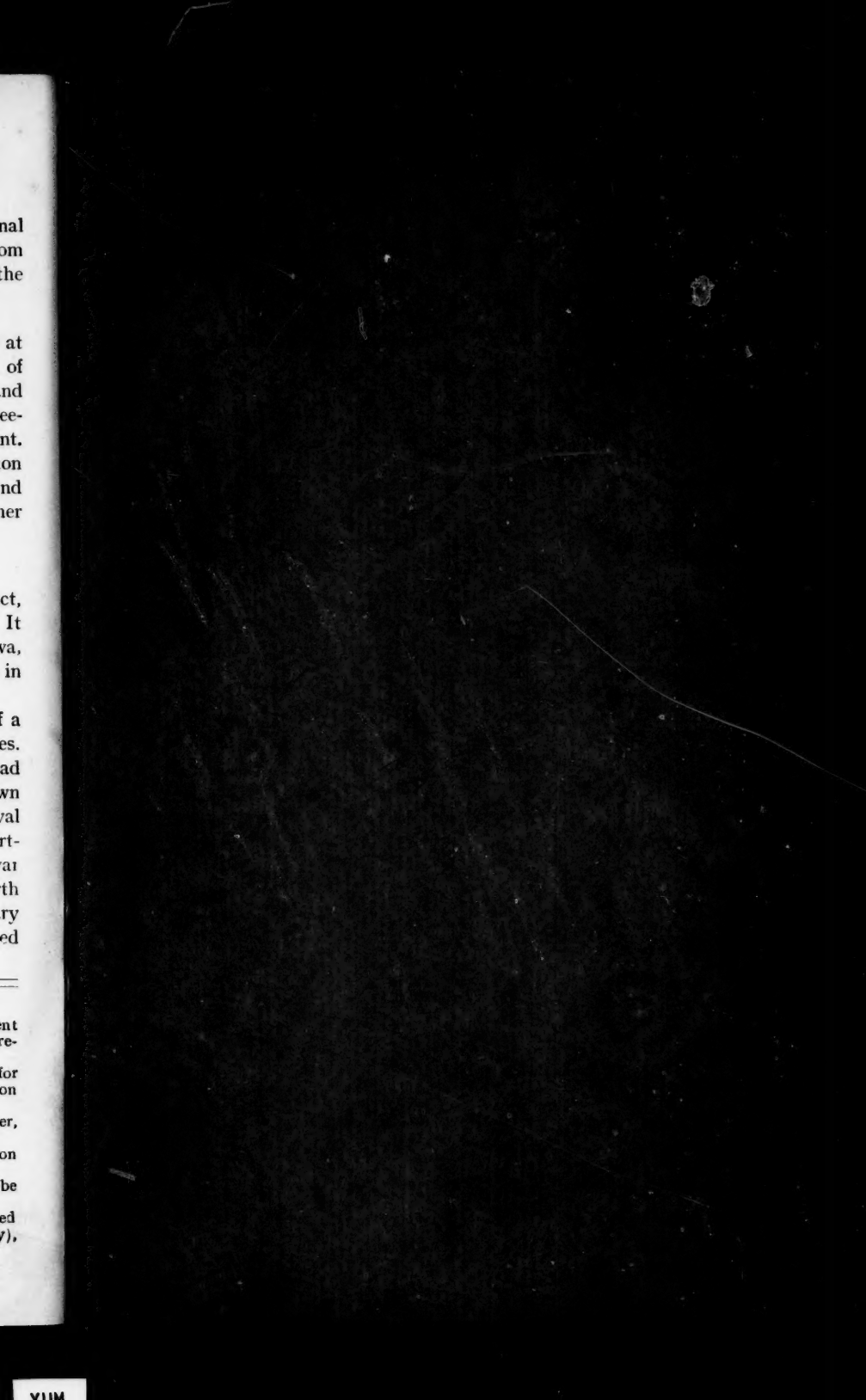
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